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If - please add note

European part of R.S.F.S.R. (southeastern (Don Province)), Kazakhstan (southern), Kirgizia (Chu lowlands) (Protsenko 1981), Moldavia, Ukraine, and Uzbekistan; and SOUTH AMERICA - Brazil.

In Europe, Eupoecilia ambiguella and Lobesia botrana (Denis & Schiffermüller), European grape vine moth, are important pests of grapes, but differ somewhat in distribution. The first prefers cool areas while the latter thrives in warm, dry areas (Fischer-Colbrie 1980).

Characters

ADULTS (Figs. 1-2) - Adult characters from Razowski (1970, translated by T. E. Wallenmaier, Survey and Emergency Response Staff, PPQ). Wing expanse 11-15 mm, forewing length 5-7 mm. Head and thorax cream colored, more or less darkened. Labial palp (Fig. 3) 1.5 mm in male, longer than 2 mm in female, ochreous cream colored, darker sides. Antennal flagellum brown. Abdomen light brown.

Forewing wide, basally wider and distally narrower in females than in males. Ground cream to light ochreous yellow, irregularly overlaid with ochreous, wing base and outer border darker

(Figs. 1-3)

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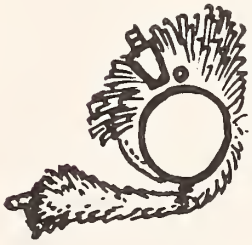
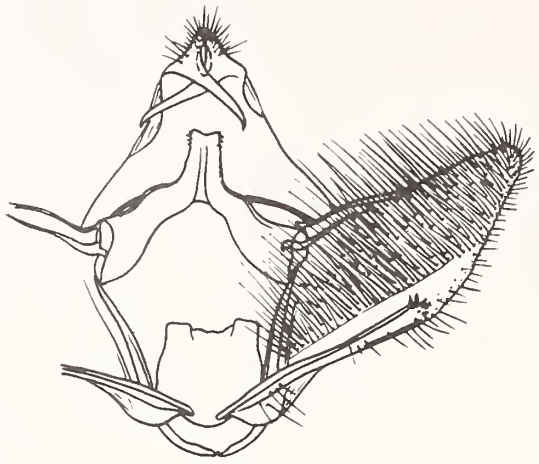


3

Eupoecilia ambiguella adults. 1. Male, dorsal view (From Bradley et al. 1973). 2. Lateral view (From Voigt 1972). 3. Head, lateral view (From Razowski 1970).

(Figs. 4-7)



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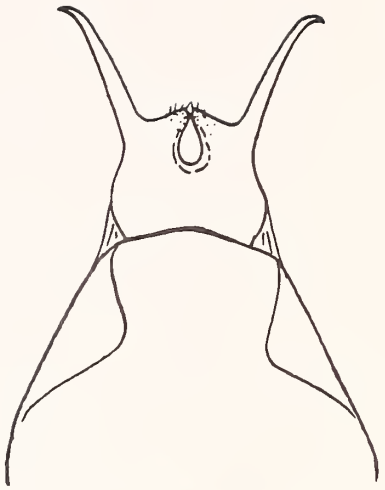

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Eupoecilia ambiguella genitalia. 4. Male, ventral view. 5. Terminus of tegumen with socii in outstretched position. 6. Aedeagus, lateral view. 7. Female, ventral view (From Razowski 1970).

than overall shade of forewing. Markings black to gray brown; wide median band expands towards costa, band occasionally rust colored in middle towards inner border. Costa and apex slightly overlaid with brown. Fringes same color as border of forewing. Hindwing brownish cream to brown, fringes whitish to brownish. Species varies in ground color and markings from light to very dark, as well as size and width of forewing.

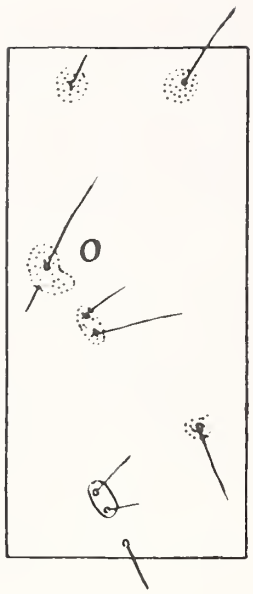
Male genitalia (Figs. 4-6). Socii fused basally, with elongate, thin lateral projections, apex formed by 2 short inward projecting setaceous medial lobes (Figs. 4-5); middle part of transtilla substantial. Valva long with sloped caudal edge; sacculus wide at base then slender, with short spine at end. Aedeagus (Fig. 6) very large, long. Cornuti numerous: single, long, thin cornutus, two shorter median groups and ring of distal cornuti, last having slab-shaped bases.

Female genitalia (Fig. 7). Antrum very short, wide, connected with thin distal sterigma; ductus bursae short, membranous, anteriorly set with numerous short spines, then sclerotized; this sclerite extends to bursa copulatrix and likewise set with spines. Forepart of corpus bursae membranous.

EGGS - Lenticular, strong polygonal reticulation, translucent, opalescent (Carter 1984).

LARVAE - Body brownish white, granulated; head, cervical shield, thoracic legs black brown; anal shield, large pinacula brown. Head sometimes lighter; only thoracic pinacula brown. Ocelli equidistant from each other. Cervical shield with seta SD1 farther from SD2 than from XD2, D2 ventrocaudad from D1. Diagonally placed prespiracular pinaculum with setae L2, L1, and L3 in straight line, L2 lowest. Mesothorax with seta SD2 dorsocaudad from SD1, V1 distinctly set off from coxa. Abdominal segment 1 with setae L1 and L2 in vertical line; 8th, horizontal; others, diagonal. Abdominal segments 1 and 2 with SD2 distinctly separated from pinaculum SD1. Abdominal segment 8 with distance between setae D2 equal to that between setae D1. Seta SD1 on reniform pinaculum, somewhat ventrocraniad from spiracle (Fig. 8). Abdominal segment 9 with setae D2, D1 and SD1, and L1 and L2 on common pinacula, seta L3 lacking, distance between V1 greater here than on abdominal segment 8. Abdominal segments 1 and 2 with group SV consisting of three setae. Abdominal segments 7, 8, and 9 with group SV consisting of two setae. Proleg crochets in uniordinal round circles, crochets number 25-30, those of caudal disk number about 15. Anal comb with six spines (Swatschek 1958).

(Fig. 8)



Eupoecilia ambiguella larval abdominal segment 8 (From Swatschek 1958).

PUPAE - Light reddish brown, cremaster truncate with 16 hooked setae (Carter 1984).

Characteristic Damage

On grape, flower clusters are webbed (Fig. 9) and the blossoms destroyed. The berries (Fig. 10) show tunnels through the pulp and partly eaten seeds (Balachowsky 1966). Cultivars with grape skins that are green, yellow green, or yellow are more heavily attacked than those that are wine red or dark blue (Kharizanov 1982).

Detection Notes

Propagative material of the primary host Vitis spp. (grapes), except seeds, is prohibited from all foreign countries, except Canada, because of various diseases. Plants or plant parts of many of its hosts intended for propagation enter only for scientific purposes under USDA permit or are subject to inspection and postentry quarantine under Title 7, Part 319.37 of the Code of Federal Regulations. Most host fruits intended for consumption are prohibited entry or required fumigation from infested countries into the United States under Title 7, Part 319.56 of the Code of Federal Regulations. These restrictions are placed on these hosts not for E. ambiguella but for other pests. In the past 10 years, there was one interception each in 1980 and 1982 at U.S. ports of entry identified as this pest.

(Figs. 9-10)

9

10

Eupoecilia ambiguella larval damage by: 9. First generation to grape flower buds. 10. Second generation to grapes (From Voigt 1972).

This species may be detected in the following ways.

1. Survey in damp places or during wet summers when the adults increase.

2. Inspect for eggs on the blossoms (not on unopened buds or the bracts or pedicels of vines) or on the grapes.

3. Cut flower buds open and look for larvae, especially webbed flower clusters. Cut the fruit to expose the larva tunneling in the pulp and seeds.

4. Inspect for cocoons under loose bark on the stems of the vines, attached to the stems, in cracks in the poles, or among debris on the ground.

Pin and label suspect adult specimens for subsequent identification. Submit suspect larvae or pupae in alcohol for identification.

Biology

In the Ukraine, Soviet Union, this pest has two generations a year. Pupae overwinter under loose bark, in cracks in the poles (Vasil'ev 1940), among debris on the ground, or attached to a plant stem. Larvae may sometimes overwinter in the United Kingdom (Bradley et al. 1973). In Bulgaria, 5-12 pupae overwinter per vine (Dimchev 1961). Pupation in the laboratory was completed at means of 10° and 14° C in 43 and 25 days, respectively. Adults emerge from early to late May, either 1 month before flowering or when buds begin to bloom (Vasil'ev 1940). Flying at dusk, adults become active at 12-13° C, markedly so at 15° C and above (Götz 1941). The flight lasts from 9 to 21 days (Vasil'ev 1940). Adults require moisture, especially during oviposition, and accordingly, appear in large numbers and multiply more freely in damp places and during wet summers (Dobrodeev 1915).

Females of the overwintered generation begin to oviposit at means of 14-15° and 17-19° C in 7-10 and 5-7 days, respectively (Vasil'ev 1940). Each lays 50-70 or more eggs singly on blossoms at dusk or during wet days (Dobrodeev 1915). Eggs in the laboratory hatched in 7, 13, and 22 days at 19°, 15°, and 11° C, respectively, but none hatched at 23° C (Vasil'ev 1940).

First generation larvae burrow into the flower buds and web them together as they move about (Vasil'ev 1940) during the night or on wet days. To protect against bad weather, they spin a thicker tube inside which they pass the day, coming out to feed at dusk (Dobrodeev 1915). The larval stage lasts about 20

days. Pupation, which occurs on the flowers, lasts 15 and 11 days at means of 19° and 23° C, respectively (Vasil'ev 1940).

First generation adults emerge when grapes reach pea size, and remain for 12-29 days. Females each deposit on the berries about 15-30 eggs, fewer than half that deposited by the overwintered generation (Dobrodeev 1915). Eggs hatch in 5-7 days at 21-25° C (Vasil'ev 1940). In the United Kingdom, the larva feeds inside a glossy buckthorn berry, eating pulp and seeds, usually webbing the berry to a leaf. Later larval instars may move to a fresh berry or join two or three berries together with a silken tube. When full grown in the fall, the larva leaves the feeding place and constructs a case from leaf fragments, sometimes pupating in the fall (Bradley et al. 1973).

In western Europe, females lay eggs in May and July; larvae hatch from May to June and from July to October; pupae occur in June and from September through May; adults emerge from May to June and from June to July. Occasionally, there is a third generation in October (Carter 1984).

Control

In northern Italy, vines with dense foliage, closely planted in rows at right angles to the prevailing wind, were the most susceptible to attack. Therefore, the mode of planting, cultivation, and pruning were all important factors in determining vine moth populations (Valli 1975).

In Bulgaria, controls were applied before larvae bore into the fruit. Spraying was economically justifiable when 4-5 percent of the bunches were affected. Infestation at this level reduces yield by about 30-40 kg per ha (Nedyalkov 1975).

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